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**Hoehn et al.**

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(54) **FABRIC-BASED DEVICES WITH FORCE SENSING**

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CPC ..... **G06F 3/014** (2013.01); **A41D 1/005** (2013.01); **A41D 31/02** (2013.01); **A61B 5/6806** (2013.01);  
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(58) **Field of Classification Search**  
CPC combination set(s) only.  
See application file for complete search history.

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(57) **ABSTRACT**

A fabric-based item such as a fabric glove may include force sensing circuitry. The force sensing circuitry may include force sensor elements formed from electrodes on a compressible substrate such as an elastomeric polymer substrate. The fabric may include intertwined strands of material including conductive strands. Signals from the force sensing circuitry may be conveyed to control circuitry in the item using the conductive strands. Wireless circuitry in the fabric-based item may be used to convey force sensor information to external equipment. The compressible substrate may have opposing upper and lower surfaces. Electrodes for the force sensor elements may be formed on the upper and lower surfaces. Stiffeners may overlap the electrodes to help decouple adjacent force sensor elements from each other. Integrated circuits can be attached to respective force sensing elements using adhesive.

**29 Claims, 17 Drawing Sheets**

